

Figure 1: MS alignment

		1	60
E. coli MS		MTILNHTLGFPRVGLRRELKKAQESYWAGNSTREELLAVGRELRARHWDQQKQAGIDLLP	
yeast MS		MVQ.SAVLGFPRIGPNRELKKAATEGYWGKITVDELFKVGKDLRTQNWKLQKEAGVDIIP	
tobacco MS		MA..SHIVGYPRMGPKRELKFALESFWDGKSSAEDLKVAADLRSSIWQMADAGIKYIP	
C. roseus MS		MA..SHIVGYPRMGPKRELKFALESFWDGKSSAEDLQKVAADLRSSIWQMADAGIKYIP	
corn MS/partial		
soy MS/partial		
		61	120
E. coli MS		VGDFAWYDHLVLTSLLLGNVPARHQN.KDGSVDIDTLFRIGRG..RAPTGE.....PAAAA	
yeast MS		SNDFSFDQVLDLSLLFNVIPDRYTKYDLSPi..DTLFAMGRGLQRKATETEKAVDVTAL	
tobacco MS		XNTFSYYDQVLDTTAMLGAVPARY.NWAGGEIAFDTYFSMARG.....NXSVPAM	
C. roseus MS		SNTFSYDQVLDTATMLGAVPPRY.NFAGEIGFDTYFSMARG.....NASVPAM	
corn MS/partial		
soy MS/partial		
		121	180
E. coli MS		EMTKWFNTNYHYMVPEFVKGQQFKLTWTQLLDEVDEALALGHKVKPVLLGPVTLWLWLGKV	
yeast MS		EMVKWFDSNYHYVRPTFSKTTQFKLNGQKPVDEFLEAKELGIHTRPVLLGPVSYLFLGKA	
tobacco MS		EMTKWXTDNYHFIVPELGPDVNFSYASHKAVDEYKEAKGLGVDTPVLIGPVSYLLLSKP	
C. roseus MS		EMTKWFDNTYHYIVPELGPENVFSYASHKAVNEYKEAKELGVDTPVLVGPVTFLLLSKP	
corn MS/partial		
soy MS/partial		
		181	240
E. coli MS		.KGEQ..FDRLSLLNDILPVYQQVLAELAKRGIEWVQIDEPALVLELPQAWLDAYKPAYD	
yeast MS		DKDSLDEPL.SLLEQLLPLYTEILSKLASAGATEVQIDEPVLVLDLPANAQAIAIKKAYT	
tobacco MS		AKGVEKSFPLSLLDKVLPIYKEVIAELKAAGASWIOFDEPTLVLDLQAHQLEAFTKAYA	
C. roseus MS		AKGVEKTFPLSLLDKILPVYKEVIGELKAAGASWIOFDEPTLVLDLQAHQLEAFTKAYS	
corn MS/partial		
soy MS/partial		

SECRET

421 TAQDSQRANVYEVRAEAQARARFKLPWPPTTTIGSFPPQTTEIRTLRLDFKKGNLDANNYRT
DEKMSTRAAPFEQRLPEQQKVFNLPLFPPTTTIGSFPPQTKDIRINRNKFNKGTISAEYEYK
KGS DHRRATNVSSRLDAQQKKLNLPLVLPPTTTIGSFPPQTVELRRVRREYKAKKISEEYVK
RGS DHRRATTVSARLDAQQKKLNLPLVLPPTTTIGSFPPQTLELRRVRREYKAKKISEDDEVK
.....VTXGEXIS
KGS DHRRATNVSARLDAQQKKLNLVLPPTTTIGSFPPQTADLRRVRREFFKANKISEEYVK

FIGURE 1 CONTINUED

481	E. coli MS	GIAEHKQAI VEQERLGLDVLVHGEAERN DMVEYFGEHLDFVFTQNGWVQSYGSR	540
	yeast MS	FINSEIEKVIRFQEEIGLDVLVHGEPE RNDMVQYFGEQINGYAF TNGWVQSYGSR	
	tobacco MS	AIKAEIKKVVLDQEELDIDVLVHGEPE RNDMVQYFGEQLSGFAFTANGWVQSYGSR	
	C. roseus MS	AIKEEISKVVKLQEELDIDVLVHGEPE RNDMVQYFGEQLSGFAFTANGWVQSYGSR	
	corn MS/partial	AIMEXISKXVRIQEELDIDVVVHGEPE RDXXXYFGEXL SFASTATGWXXSYGSR	
	soy MS/partial	SIKEEIRKVVELQEELDIDVLVHGEPE RNDMVQYFGEQLSGFAFTVNGWVQSYGSR	
541	E. coli MS	PIVIGDISRPAPITVEWAKYAQSLTDKPVKGM LTGPVTILCWSFPREDVSRETIAKQIAL	600
	yeast MS	PIIVGDLSRPKAMSVKESVYAQSITSKPVKGM LTGPITCLRWSFPRDDVDQKTQAMQLAL	
	tobacco MS	PIIYGDVSRPNPMTVFSKTAQSM TKRPMKGM LTGPVTILNWSFVRNDQPRXETCYQIAX	
	C. roseus MS	PIIYGDVSRPNPMTVFSQTAQSM TKRPMKGM LTGPVTILNWSFVRNDQPRFETCYQIAL	
	corn MS/partial	PIIYGDVSRPKPMTVFWSSLAQSF TKRPMKGM LTGPVTILNWXFVRNDQPRSETTYQIAL	
	soy MS/partial	PIIYGDVSRPKPMTVFWSSLAQSF TKRPMKGM LTGPVTILNWXFVRNDQPRSETTYQIAL	
601	E. coli MS	ACVMKWPIWKPLELASSRLTNRR LRQGLPLRRS.DWDAYLQWGV EAFRINAAVAKDDTQI	660
	yeast MS	ALRDEVNDLEAAGIKV IQVDEPALREGL PLREGTERSAYYTWAAEAFRVATSGVANKTQI	
	tobacco MS	XIKDEVEDLEKAXITV IQIDEAALREGL PLRKA.EHAFYLNWAVHSFRITNVGIQD TTQI	
	C. roseus MS	AIKDEVEDLEKAGINVIQ IDEAALREGL PLRKA.EHAFYLDWAVHSFRITNLP LQD TTQI	
	corn MS/partial	AIKDEVEDLEKAGITV IQIDEAALREGL PLXKS.EQAHYLDWAVHAFRITNVGVQD TTQI	
	soy MS/partial	AIKDEVEDLEKAGITV IQIDEAALREGL PLXKS.EQAHYLDWAVHAFRITNVGVQD TTQI	
661	E. coli MS	HTHMCYCEFN DIMDSIAALDRDVTIE.TSRDMELLESFEE.FDYPNEIGPGVYDIHSP	720
	yeast MS	HSHFCYSDDLDP..NHIKALDADVVSIEFSKKDDANYIAEFKN...YPNHIGLGLFDI HSP	
	tobacco MS	HTHMCYSNFNDI IHSIIDMDADVITIE.NSRSEKLLSVFREGVKYGAGIGPGVYDIHSP	
	C. roseus MS	HTHMCYSNFNDI IHSIIDMDADVMTIE.NSRSEKLLSVFREGVKYGAGIGPGVYDIHSP	
	corn MS/partial	HTHMCYSNFNDI IHSIIDMDADVITIE.NSRSEKLLSVFREGVKYGAGIXPGVYDIHSP	
	soy MS/partial	HTHMCYSNFNDI IHSIIDMDADVITIE.NSRSEKLLSVFREGVKYGAGIXPGVYDIHSP	

FIGURE 1 CONTINUED

780

E. coli MS
yeast MS
tobacco MS
C. roseus MS
corn MS/partial
soy MS/partial

721
NVPSVEWIEALLKKAARIIPAERLWNVPDCGLKTRGWPETRAAALANMVAAQNLRRG...
RIPSKDEFIAKISTILKSYPAEKFVNPDCLGKTRGWEETRLSLTHMVEAAKYFREQY...
RIPSTEEIADRVNKMMLAVLDTNILWNVPDCGLKTRKYAEVKPALENMVSAAKAIRTQLAS
RIPSTEEIADRINKMLAVLDTNILWNVPDCGLKTRKYAEVKPALENMVSAAKLIRTQLAS
.....
RIPPTEEIADRINKMLAVLEKNILWNVPDCGLKTRKYTEVKPALTNMVAAAKLIRNELAK

/80

781

E. coli MS ...
yeast MS KN.
tobacco MS SK.
C. roseus MS AK.
corn MS/partial ...

SEQ ID NO:02
SEQ ID NO:04
SEQ ID NO:06
SEQ ID NO:08
SEQ ID NO:10
SEQ ID NO:11

SEQ ID NO:02
SEQ ID NO:04
SEQ ID NO:06
SEQ ID NO:08
SEQ ID NO:10
SEQ ID NO:11

SEQ	ID	NO:02
SEQ	ID	NO:04
SEQ	ID	NO:06
SEQ	ID	NO:08
SEQ	ID	NO:10
SEQ	ID	NO:11

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*****  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
VPELGPSTKFTYASHKAVSEYKEAKALGIDTVPVLGVPVSYLLLSKPAKGVEKSFLLSL
VPELGPDVNFTXASQKAVDEYKEAKALGVDTPVLVGPVTYLLLSKPAKGVEKSFLLSL
VPELGPDVNFSYASHKAVDEYKEAKGLGVDTPVLIGVPVSYLLLSKPAKGVEKSFLLSL
VPEL-----
VPELGPVNFYSYASHKAVNEYKEAKELGVDTPVLVGPVTFLLSKPAKGVEKTFPLLSL
121
180

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FIGURE 2 CONTINUED

SEQ ID NO:02	* * * * *	*****	*****	**	*	*	*	*	*	*	*	*	*	*
SEQ ID NO:04		LGSILPIYKEVVAELKAAGASW	IQDEPTLVKD	LD	DAH	ELAA	FSS	AYAE	LESS	FS	GL	N	V	L
SEQ ID NO:06		LPKVLAVYKEVIAIDLKAAGASW	IQDEPTLVLD	LESH	KLQ	AFT	DAY	AE	LAP	AL	SD	L	N	V
SEQ ID NO:08		LDKVLPIYKEVIAELKAAGASW	IQDEPTLVLD	LQ	AH	Q	EA	FT	KAY	AE	LESS	SL	GL	N
SEQ ID NO:10		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
SEQ ID NO:11		LDKILPVYKEVIGELKAAGASW	IQDEPTLVLD	LESH	Q	EA	FT	KAY	SE	LE	ST	LS	GL	N

181 240

SEQ ID NO:02	*****	*	*	*	*	*	*	*	*	*	*	*	*	*
SEQ ID NO:04		ETYFADIPAESYKTLTSLSGVT	AYGFDLIR	GA	KT	LD	LIR	SS	FP	SG	KYL	FAG	V	D
SEQ ID NO:06		ETYFADIPAEAYKTLTSLNGVT	AYGFDLVR	GT	HT	LD	L	KG	FP	SG	KYL	FAG	V	D
SEQ ID NO:08		ETYFADVPAEAFKTLTALKGVT	AFGFDLVR	GA	QT	LD	L	KG	FP	SG	KYL	FAG	V	D
SEQ ID NO:10		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
SEQ ID NO:11		ETYFADIPAEYKILTALKGVT	GFGFDLVR	GA	KT	LD	L	KG	FP	SG	KYL	FAG	V	D

241 300

SEQ ID NO:02	*****	*	*	*	*	*	*	*	*	*	*	*	*	*
SEQ ID NO:04		DDLAASLSTLHSLEAVAGK	DLVVSTSC	SLM	HTA	VD	LV	NET	KL	D	DE	I	K	S
SEQ ID NO:06		NDLAASLTTLQLEGIVGK	DLVVSTSS	SL	LL	HTA	VD	LV	NET	KL	D	DE	I	K
SEQ ID NO:08		NDLAASLNLLQSLEGIVGK	DLVVSTSC	SL	LL	HTA	VD	LV	NET	KL	D	DE	I	K
SEQ ID NO:10		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
SEQ ID NO:11		NDLAASLSTLQSLEGIVGK	DLVVSTSC	SL	LL	HTA	VD	LV	NE	PK	L	D	KE	I

301 360

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WASHINGTON, D. C.

SEQ	ID NO:02
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SEQ	ID NO:08
SEQ	ID NO:10
SEQ	ID NO:11

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SEQ ID NO:02
SEQ ID NO:04
SEQ ID NO:06
SEQ ID NO:08
SEQ ID NO:10
SEQ ID NO:11

FIGURE 2 CONTINUED

SEQ ID NO:02	* * * * *	VFDTNILWVNPD	CGGLKTRKYTEVKP	PALTNMVSATK	LIRTQLASAK
SEQ ID NO:04		VLEKNILWVNPD	CGGLKTRKYTEVKP	PSQNMVAAK	LIRYELA--K
SEQ ID NO:06		VLDTNILWVNPD	CGGLKTRKYAEVKP	ALENMMVSAK	AIRTQLASSK
SEQ ID NO:08		-----			
SEQ ID NO:10		-----			
SEQ ID NO:11		VLDTNILWVNPD	CGGLKTRKYAEVKP	ALENMMVSAK	LIRTQLASAK

721

765

09999999 = 012302